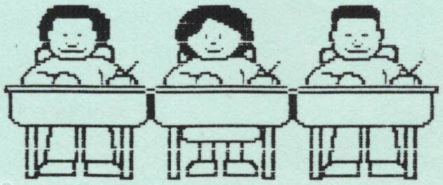
ELEMENTARY SCIENCE ACTIVITIES

ASSEMBLED BY ESSA CLASS
JULY 5-7, 1989



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Nancy Koerperick July 6, 1989

Southwestern Schools Hazel Green Grade 1

SEED POWER

Process Skills

1. Observing - The student will make accurate observations of seeds and plants, and growth using the senses.

2. Measuring and Comparing - The student will measure plants and compare the growth.

3. Describing - The student will describe the changes in plants, such as length of stems and addition of leaves.

4. Designing Investigations and Experiment - The student will plant sprouting seeds and care for them.

Activity 1

Materials:

Water
Bowl
Bean Seeds
Hand lens
Worksheet (Make A Seed)

Directions:

1. Explain that I am going to soak the bean seeds in water over night.
2. Encourage the students to think of why.
3. The next day, open the seed and see if they can find where the small plant is, the food is, the root is, the leaf is.
4. Encourage students to draw and label what they saw, or use worksheet: Make A Seed.
5. Put a few of remaining bean seeds on damp paper towel in bowl.
6. Observe bean seeds for next two to three days to see if they look different. Discuss why some seeds did not sprout and what that means.
7. When sprouts appear, use hand lens for each student to observe.

Student Assessment Hints:

Use drawings of seed and tell what they learned.

Teacher Notes:

Read story, "Jack And The Beanstalk".

Activity 2

MATERIALS:

Soaked bean seeds
Milk cartons with student's names on them
Soil
Centimeter Rulers
Plant Growth Chart

Directions

How Do Plants Change

1. Plant bean seeds.
2. Ask students to try to give directions how we should plant the seeds and what we need.
3. After initial preparations are completed, allow students to watch and enjoy the change of their seed. discuss plant's form and activity as weeks progress. Discuss how our environment is constantly undergoing change, and that as living things grow, they change in form.
4. Discuss what has happened to seed. Did some plants grow faster? How long did it take for the sprout appear above the ground. Can half a seed grow? Can a plant move?

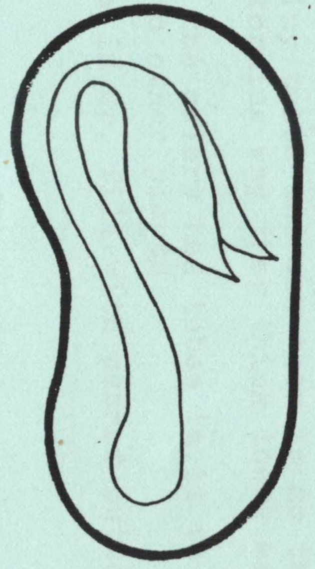
Student Assessment Hints:

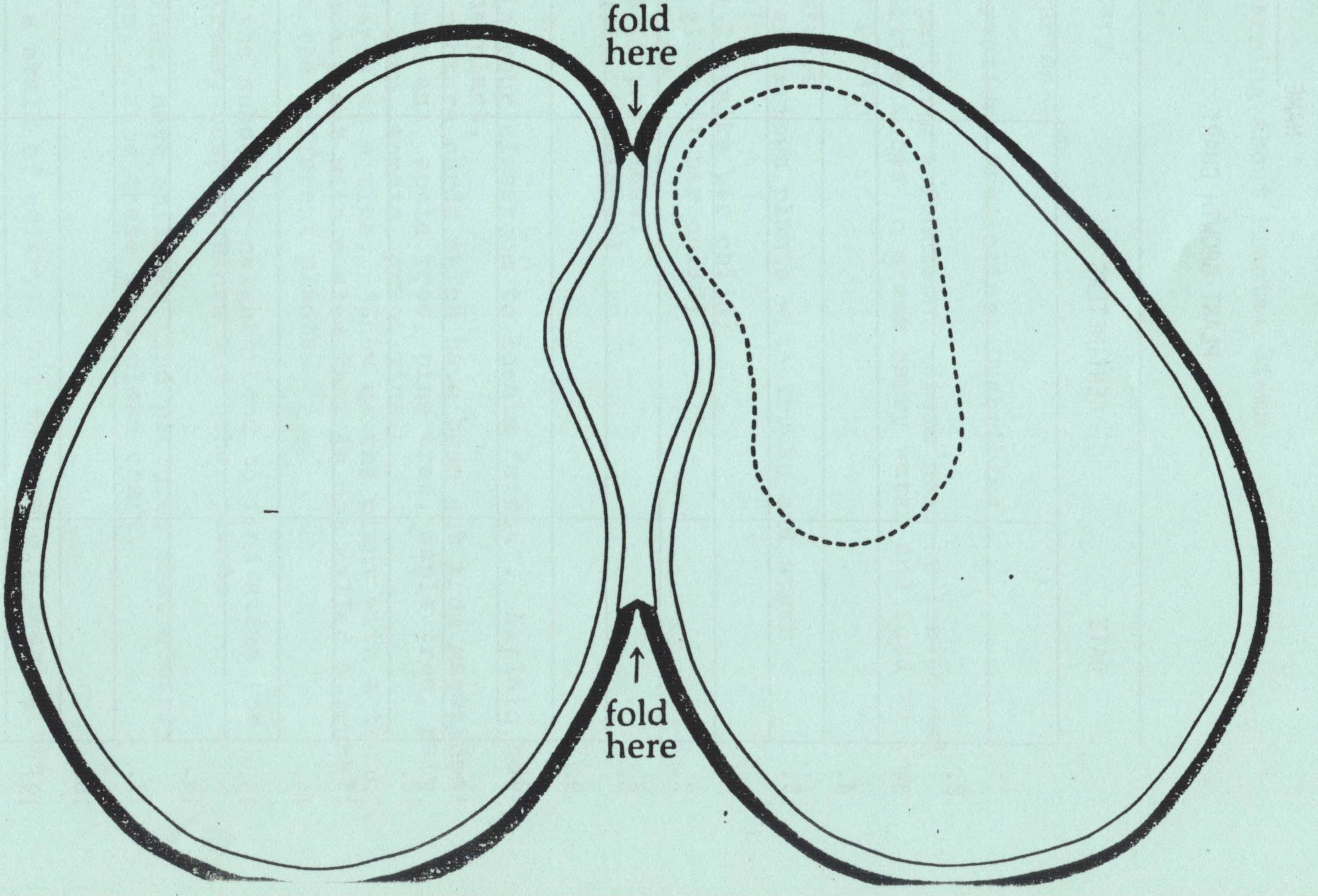
Have students make drawings of their seed on day one when they planted it and then on selected days and times after that.
Plant Growth Chart.

Name: ______________________________

Make a Seed

1. Color the seed and the baby plant.
2. Cut out the seed and the baby plant.
   Be sure to cut on the dark lines.
3. Paste the baby plant
   on the dotted lines in the seed.
4. Fold the seed together.





NAME ____________________

PLANT GROWTH CHART

	DATE	CENTIMETERS	NUMBER OF LEAVES
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			

Learning About Plants: Stems

By: Jane Einerson
146 N.Jackson St.
Lancaster, WI
Winskill Elementary

Grade Level: Kindergarten-1st

Process Skills: Observation, Predicting, Describing

Concept: Each plant part has a function. Stems hold up leaves and flowers. Little tubes in stems carry water and food to the rest of the plant.

Materials:
- various plants
- pictures of various plants with trunks and stems
- old magazines
- celery (1-2 stalks per child)
- drinking glass (1 per child)
- food coloring
- carnation (1 per class)
- peanut butter (optional)

Pre-Activities:

1. Use plants in your classroom to locate "stems". Explain how they help the plant.
2. Use various picture cards which have been cut from magazines or books. Such as: apple tree, pine tree, maple tree, palm tree, daisy, corn, tomato, grape vine.
   - a. Show 2 cards at a time. "Show me the plant with a trunk". "Show me a plant with a stem that is not called a trunk".
   - b. Describe the different plants.

3. Walk around the school or neighborhood to find stems (or trunks) of trees, bushes, vines and other plants.

4. Using magazines, have children find pictures that clearly show the stem. Paste these to a class chart.

Activity:

Give each child a stalk of celery. Cut the end off leaving the leafy top.

1. Have children describe what they see inside and outside. Demonstrate how they should examine a cross-section view.
2. Locate the tiny tubes and ask them to do the same.
3. Begin brainstorming why they think there are "tubes" in the celery.
4. Explain that the celery has tubes in it to carry water. Relate this to other plants.

   (If your time is up, fill with peanut butter and enjoy)

Experiment:

1. Fill a tall glass with water.
2. Add food coloring.
3. Put celery or carnation in water.
4. Put glasses in sunlight and leave overnight.
5. Check celery and carnation the next day.

Finish this activity by asking questions and making sure students understand the movement of water through the celery and carnation. Talk about what would happen to plants if there were no "tubes" running through the stem.

NOTE: After you have set the plants in the sun, older or more advanced students may want to predict what they think will happen.

Teacher's copy
Jo Ann Anton

SHOEBOX SCIENCE

KIT # 3

What Is A Cell?

What Do I Want Children to Discover?

The smallest unit of life capable of existing independently is the cell.
The cell consists of many parts.
Each part functions in a special way.
There are many types of cells.
All living things are made of cells.

What Will I Need?

Onion	Iodine, ink, or methylene blue stain
Eye dropper	Glass cover slip
Water	Knife
Small paper cup	Toothpick
Glass slide	Microscope

What Will We Discuss?

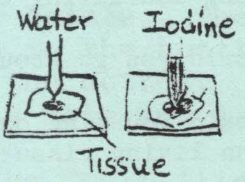
How does a rock differ from a plant?
What do you think living things are made of?
How would you find out?

PROCESSES

What Will Children Do? OBSERVING

1. Obtain an onion and a knife. Cut the onion in half. What do you notice about its structure?
2. Obtain an eye dropper, a cup of water, a glass slide, iodine, and a glass cover slip. Peel off an inside ring of the onion. From this ring, pull off the outer layer of tissue. This layer should be as thin as tissue paper. Place this tissue in a drop of water on a glass slide.

HYPOTHESIZING — What do you think will happen if you place a drop of iodine on the tissue?



3. Place a drop of iodine on the tissue.

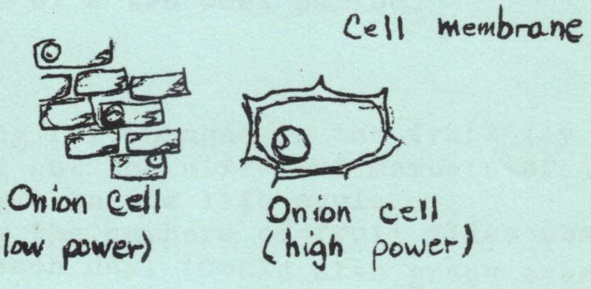
OBSERVING — What effect does iodine have on the onion tissue?
INFERRING — How will this help you to see the tissue?
OBSERVING

4. Observe the tissue through the microscope. Record your observations. The small things you see are called cells.

OBSERVING — How are these cells arranged?

What Must I Know?

The children should see what is illustrated in the diagram.



SHOEBOX SCIENCE Kit # 3 continued

HYPOTHESIZING	What do you think you see if you look through the high power?
	5. Try the high power.
OBSERVING	What do you see?
DESIGNING AN INVESTIGATION	How could you find out what the parts of cells are called?
DESIGNING AN INVESTIGATION	How could you find out about the functions of these parts?
INFERRING	How do you think human tissue is similar to plant tissue?
DESIGNING AN INVESTIGATION	How would you find out?
	6. Obtain a toothpick, a knife, a glass slide, and a cover slip. Gently scrape the inside of your cheek or lip with the toothpick. With a knife, scrape some of the white material on the toothpick into a drop of water on a glass slide. Then add a drop of iodine.
	7. Spread the material out in the water and place a glass cover slip over it. Examine the material with your microscope under high power.
OBSERVING	What do you see?
COMPARING	How are the cells similar to those you saw in the onion tissue?
INFERRING	From what you have observed, what could you say about living matter?

How Will Children Use or Apply What They Discover?	1. What are some similarities and some differences of all living tissue? 2. How long can living tissue exist without water? How would you go about finding out? 3. How could you find out what effect prolonged darkness will have on living tissue?

Sharon Snyder
St. Joseph School
Hazel Green, Wisconsin
Grades 3-4

Unit: Investigating Living Things and Environments

Activity: Raising Fruit Flies

Objective: To discover how a population increases

Materials: a glass bottle with a small opening, a paper funnel, some cotton, a small piece of very ripe banana

I usually have my students work in groups of 3. You could vary that number to suit your classroom.

1. Demonstrate how to set up the bottle for the project. Have the students place the piece of ripe banana in the bottle. Place the paper funnel in the neck of the bottle.

2. We have previously discussed what fruit flies are and what they look like. I would now ask the students to predict where they might find fruit flies. Possible suggestions would be in a kitchen, near a garden, near a garbage can, or near a fruit and vegetable stand. The students then put the bottles in a location where they think it might attract fruit flies.

3. The students watch the bottles daily to observe whether or not there are flies in the bottle. They are to wait until there are several flies in the bottle before stopping the mouth of the bottle with the cotton. This will make it more likely they will get a male and a female.

4. Each day the children count the fruit flies in the jar, and record the number on a graph. They also observe the bottles to see if they notice any other living things in the bottles. After one week, they make drawings of the different members of the fruit fly population that they observe in the bottle. It is possible to observe egg, larvae, and pupae as well as the adult flies.

5. The children can predict what they think will happen to each of these stages based on their observations. They might also predict how many fruit flies will be in their population at the end of a two week period.

Process skills used:

1. observation - watching for changes in the fruit fly population
2. classifying - sorting out the different members of the population by stages in the life cycle
3. measuring - graphing the numbers of fruit flies observed in the bottle each day. (Could also graph eggs, larvae, etc.)

Process skills (continued)

4. describing - drawing pictures of the various stages in the life cycle; describing verbally what is happening in the jar

5. hypothesizing - give an explanation based on their observations of the bottle as to how a fruit fly population increases

6. predicting - predicting where to find the flies; predicting the number of flies at the end of one week; of two weeks.

7. carrying out an experiment

This activity has been very popular with my students. We have also had good luck using Concord grapes rather than bananas. The bottles need to be kept in a warm place out of direct sunlight.

Karen Crull
Grade 1
Montfort Elementary

WATER, WATER EVERYWHERE ...

BACKGROUND: This will be an experiment to go with our discussion of the water cycle. Those puddles that you love playing in do not stay around forever. In this activity, you will try to discover where the water from puddles does go. Your "puddle" water will be in jars.

PROCESS SKILLS:
Observing
Measuring
Predicting
Describing
Carrying out an experiment

MATERIALS:
4 identical glass jars
2 lids
water
4 paper charts for recording

PROCEDURE:

1. Fill each jar with exactly the same amount of water. Use a magic marker to draw a line on each jar at its water leve.

2. Put one jar on the window sill - in the direct sunlight.
   Put a second jar - with a lid on tightly - on the same sill in the direct sunlight.
   Put a third jar in a spot that will never receive any direct sunlight.
   Put the fourth jar - with a lid on tightly - in the same spot where no direct sunlight will ever touch it.

3. Tape a chart paper next to each jar. (See the attached chart paper) Mark a line that is the same as the water line in each jar on the chart. Write the date by that first line so the beginning date of this experiment is recorded.

4. Each Monday and Thursday at 8:30 a.m. mark each chart to show the jar's water line along with the date of this new mark.

5. Observe and record this experiment for at least two weeks.

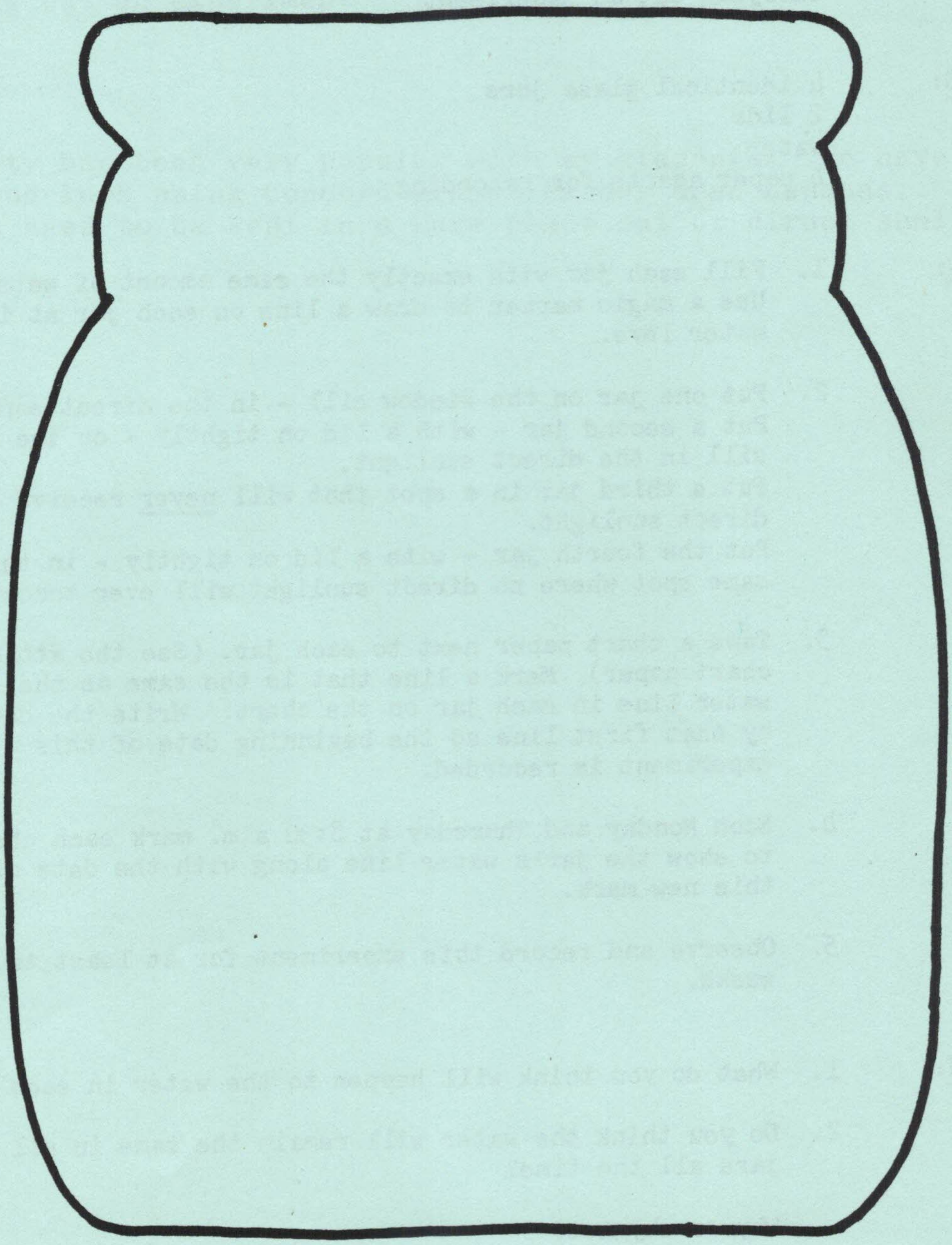
PREDICTION:

1. What do you think will happen to the water in each jar?

2. Do you think the water will remain the same in all four jars all the time?

   Why or why not?

Cut 4



Laureen Donahoe

S.S. Andrew-Thomas

Potosi, Wisconsin

Grade 1

HOT WATER MEETS COLD WATER!

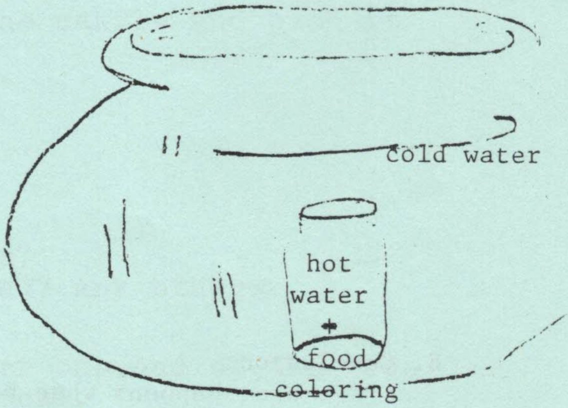
Skills: Predicting, Inferring, and developing a model.

Background: There are large moving rivers of water in the ocean called currents. Some currents are warm and other currents are cold. In this activity, you will predict what will happen when warm water meets cold water.

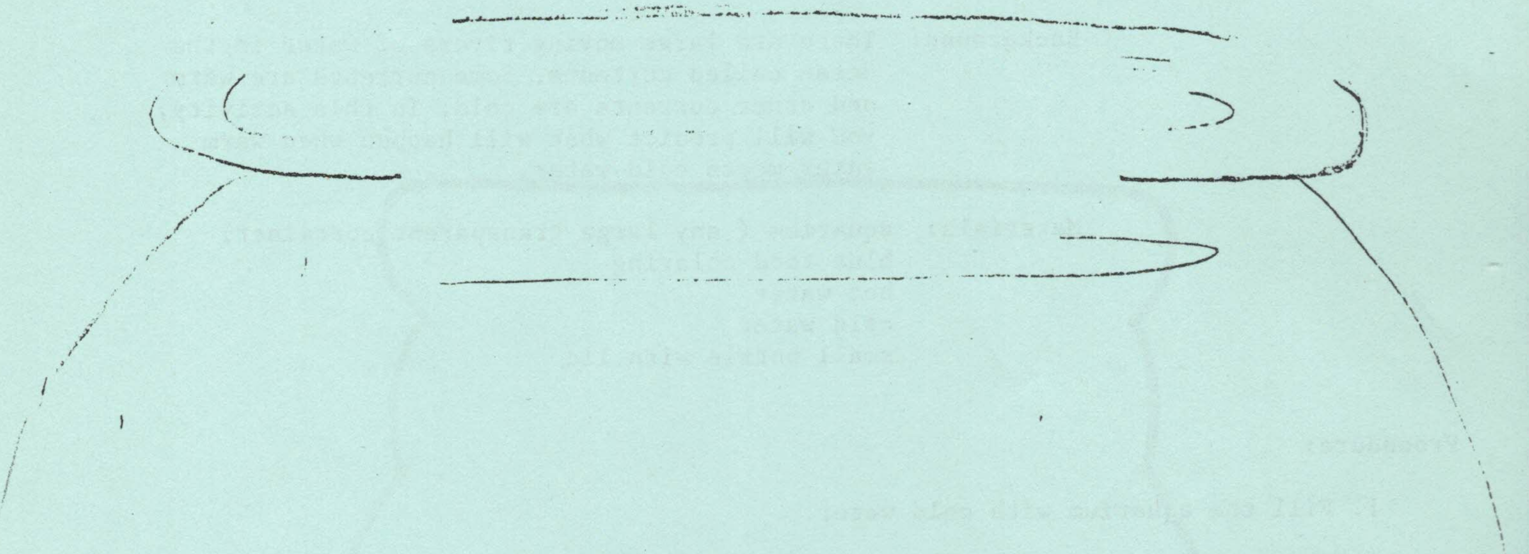
Materials:
- aquarium (any large transparent container)
- blue food coloring
- hot water
- cold water
- small bottle with lid

Procedure:

1. Fill the aquarium with cold water.
2. Fill the small bottle with hot water. Then add several drops of blue food coloring to the water.
3. Place a lid on the bottle but do not tighten it.
4. On a sheet of paper predict what will happen when the bottle is placed in the cold water and the lid is removed.
5. Hold your thumb on the lid to keep it it place. Then put the bottle into the aquarium. Set it on the bottom. Slowly lift the lid off the bottle and take your hand out of the water.
6. Does a current form ? Yes or No



7. Make a drawing in the aquarium below. Show what happens when hot water meets cold water.



8. Conclusion:
    What happens when hot water meets cold water?

Dean Knetter
Grade 5
Boscobel Elementary School

Properties of Air

MATERIALS- 8 in. clear plastic tube 1 in. dia. , oil base clay, birthday candle, matches, rubber band, 3x3 in. rubber sheeting, tray

OBJECTIVES- Observe expansion of gases (air) in a closed system. Observe a partial vacuum being formed by consumption of oxygen in a closed system. Learn lab safety procedures.

PROCESS SKILLS- Observation, Measuring, Predict, Describe, Inferring

SAFETY- Two students in a lab group,Adequate spacing between lab groups, roll up long sleeves above elbows, lighting and holding a match,fire extinguisher, fire blanket, instructions

Directions

1. Assemble in lab groups.
2. Pick up one of each of the materials on your tray.
3. Fashion a ball of clay into a thick flat circle larger than the diameter of the tube.
4. Place the candle in the middle of the clay and light it.
5. Hold the tube with one hand and place the palm of your other hand over one end to make an air tight seal.
6. Place the open end of the tube over the candle and push it into the clay to form an air tight seal.
7. Observe results.
8. Repeat several times.

QUESTIONS

Is speed a factor? Explain.
What other factors influence your results?
What force do you feel acting on your hand? Any others?
Explain results.

1. Secure a square of rubber sheeting over one end of the tube with a rubber band to make an air tight seal.
2. Repeat directions 4-8.

Did you make the correct predictions?
What forces did you see acting on the rubber sheeting? Explain.
What factors influence your results?
Is there a way to measure your results?

Barbara Edwards
first grade teacher
Richland Center

Classroom Critters

I have a classroom full of critters, and, no, I'm not talking about my **first graders**, although sometimes a few of them would come under that heading.

The main critters in my room are cavies or guinea pigs; a long-haired Peruvian male called Benjamin, a Dutch called Henrietta, a black Self called Squeakers, and a chocolate Abyssinian called Generic. I chose guinea pigs because they are larger and easier to handle and don't climb out of their cages. They also have some interesting characteristics. Every year we anxiously await the arrival of a litter and watch them grow. Each week all year long a zookeeper is appointed who is responsible for the feeding and handling of the guinea pigs. For that week the zookeeper is the only one to get a pig on their desk to pet, brush, comb, give treats, cuddle and talk to. As the children handle the animals, they discover that there is no tail, and that there are four toes on the front feet but only three on the back. They see and feel the difference in the hair such as soft and coarse, long, short, and swirled, as well as the color variations.

As the birth approaches, they write down their predictions as to how many babies, what color they will be, and how many girl or boy pups. We talk about other newborn animal babies they have seen, and predict if these pups will be similar. After birth, the children are very surprised to find that the pups have their eyes open, have a full coat, walk immediately, and eat pellets or lettuce by the end of the first day. They find out that the mother nurses them two at a time while she sits up. They keep track of how many days the pups will be allowed to nurse before the mother stops them. We go back over our predictions to figure out who came the closest. We've written chart stories, made class books, and written and illustrated stories with guinea pig shaped cover and pages. So far I've been lucky and haven't had anyone allergic to hair.

We've also followed the growth of 2 cm caterpillars to Painted Lady butterflies, and have kept log books on their growth at the three stages. We compared their stages to those of some other butterflies, and explored the differences between a butterfly and a moth, as well as make drawings of the butterfly and label the parts. Stories were a follow up activity.

We tried tadpoles for two weeks and will try again next year. The fisherman takes care of our aquarium. The children observe and figure out the reason for all the things in the aquarium. Next years addition will be an ant farm.

Curriculum Planning: Elementary Science Update

July 7, 1989

Karen M. Marklein

Chemical Changes in Matter

Grade 3

Materials: baking soda, water, vinegar, cups, spoons, paper towels

Process Skills: observing, predicting, and describing

Background: Changes may be classified as physical or chemical. Physical changes involve changes in size and shape only. (Paper tearing) Chemical changes involve changing a substance into another kind of substance.

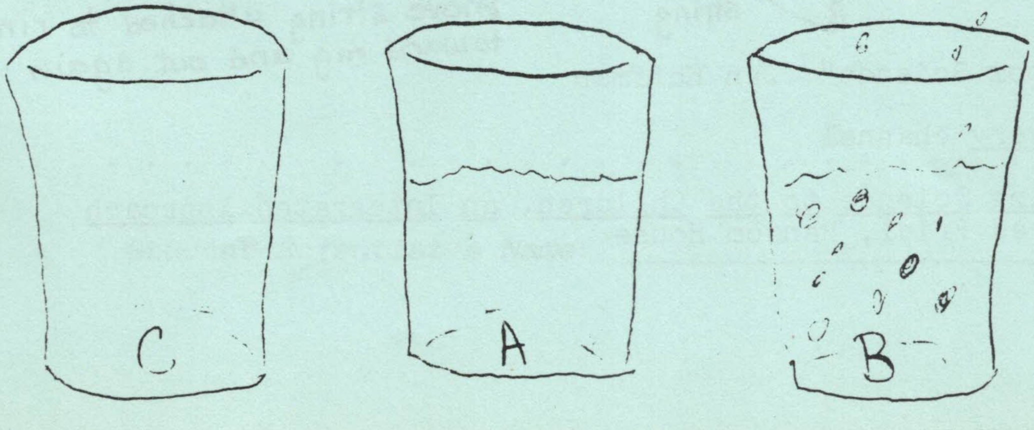
Procedure: I put students in groups of two. Each group will have three cups: A, B, and C. I do not tell students ahead of time what each cup contains. I do emphasize "DO NOT TASTE!" Then students write down what they think each cup contains.

We verbally discuss what they think will happen when the soda is added to the water. I encourage students to write their predictions down for an experiment log. We then discuss what might happen when soda is added to the vinegar. Pass out spoons.

Now, we do the test. "Put a spoonful of Cup C into Cup A." Write down the result. Add soda to the vinegar. Write down the results

We discuss their predictions and the results (describing what and why it happened.) We continue to discuss chemical changes by giving other examples (rust, burning of wood).

Results: The soda and water mixture will dissolve. The vinegar and soda will bubble causing carbon dioxide.



Bubble Shapes

Kay Niles

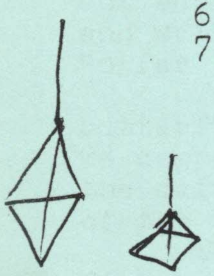
Materials:
- student scissors
- Ivory dish soap
- water (10:1)
- glycering
- small and large margarine containers
- frames
- paper towels

Process skills:
- observation
- descriptive

Purpose:

To discover the relationships of frames and bubbles.

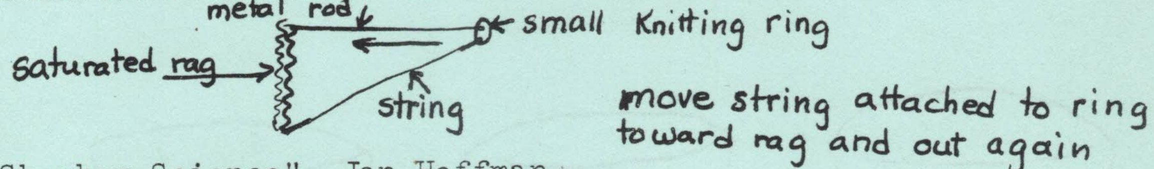
Procedure:
1. Dip scissor handle in mixture, blow bubble
2. Ask: What colors do you see?
   Why did the bubble break? (gravity pulls liquid to bottom)
   How could you make a different shaped bubble?
3. Discussion --experiment
4. Exhibit the wire frames. Ask them to draw the bubble they expect.
5. Demonstrate, using straw to blow away from frame.
6. After children try, invite them to find other shapes to try.
7. Students record:



Bubble	Shape frame	Shape bubble
1.		
2.		
3.		
4.		
5.		

Further activities:
1. Dip 2 small margarine containers in mixture, open end facing, pull apart.

2. Demonstrate non-shape frame



move string attached to ring toward rag and out again

Resource:
1. "Shoebox Science" Jan Hoffman
2. Discovery channel
3. Teaching Science to the Children, an Integrated Approach by Alfred Fridl, Random House

Prediction / Observation Sheet

Draw a picture and label it to show:

My Prediction

. . . .

Draw a picture and label it to show:

Observed Result

. . . .

Student Scientist's Name: ______________________________

Curriculum Planning:
Elementary Science

Instructor: Dr. Koch
Report by: Fern Nall
Date: July 6, 1989

ACTIVITY: Learning about Color

PROCESS SKILLS USED: Observation, Prediction, Asking questions

GRADE LEVEL:	1st
MATERIALS:	Ice cubes, precolored with red, blue and yellow food coloring 3 clear jars paper

Instruction: Show the students the materials and have them

predict what they will do with the materials. Have them predict what will happen to the ice cubes. Then have them predict how long it will take for the cubes to melt.

Place two ice cubes in each jar. (i.e. blue, yellow/ blue, red/ and red, yellow.)
Have the students predict what the result will be. They can also predict how long until all of the cubes have melted.

Have the children record their data on the paper. They can draw a picture of what happened.

Ask them if there are any other combinations of cubes the could make.

They could then experiement with using more than one ice cube of each color to begin finding hues of colors.

To further expand the project they could then study the color wheel.

Barbara Will
St. Joseph's Sch

Seat Belt Safety

Background Information: As you know, every car made in the US today has seat belts in them and many states have laws requiring people in the cars to wear them.
In this activity we will discuss the importance of wearing seat belts.

Material

1. Toy car
2. Raw eggs
3. 5 hardcover books
4. Rubber bands
5. Tape
6. A shoe box with one end cut out
7. Ping-pong ball
8. A wooden board 2 x 4 x 12 inches

Procedure

1. First demonstrate motion to the children. Place a ping pong ball inside the box. Slowly push the shoe box with the open end forward along the floor. Suddenly stop the box.

   *What happened to the ball?

   Explanation - As the box moved, the ball was in motion. When the box stopped, the ball was still in motion. An object in motion tends to stay in motion.

2. Make a ramp to use as an aid in the demonstration as to the importance of wearing a seat belt. Do this by stacking 5 books on top of each other and then slant the board from the top of the books to the floor. Set this up about 1 foot from a wall.
3. Put the egg in the toy car and send it down the ramp into the wall.

   *What happened to the egg?

4. Now take another egg and strap it in with rubber bands and send it down the ramp.

   *What happened to the egg?

5. Relate this to a real car and wearing seat belts.

Skills in this Lesson

Observation
Inference
Questioning
Drawing conclusions
Transfer

Theresa Garvey
Boscobel, Wis.

1st -

The Colors Of The Rainbow

Children are fascinated with colors and rainbows. With this simple device children will be able to create a rainbow on a wall or ceiling of the classroom. (For older children terms such as spectrum, angle intensity of color, etc may be discussed with a more intense study of prisms.) Also the colors of the rainbow would be introduced.

You will use: Clear plastic or a glass container, (4 --6 cm deep) (a clear plastic shoe box works great also. Apocket mirror, water proof tape, a piece of cardboard as wide as the container.

Directions:

Fill the container with water until it is almost full. Put it near a window when sunlight will strike it. Attach a piece of tape to the edge of the mirror and stand the mirror on an angle near the edge of the container where the sunlight will hit it. Adjust the angle until the rainbow falls on the wall or ceiling.

Questions: How many colors are there? Name them in order.

What will happen if you hold the cardboard over the mirror?

What would happen if a different liquid such as cooking oil were used?